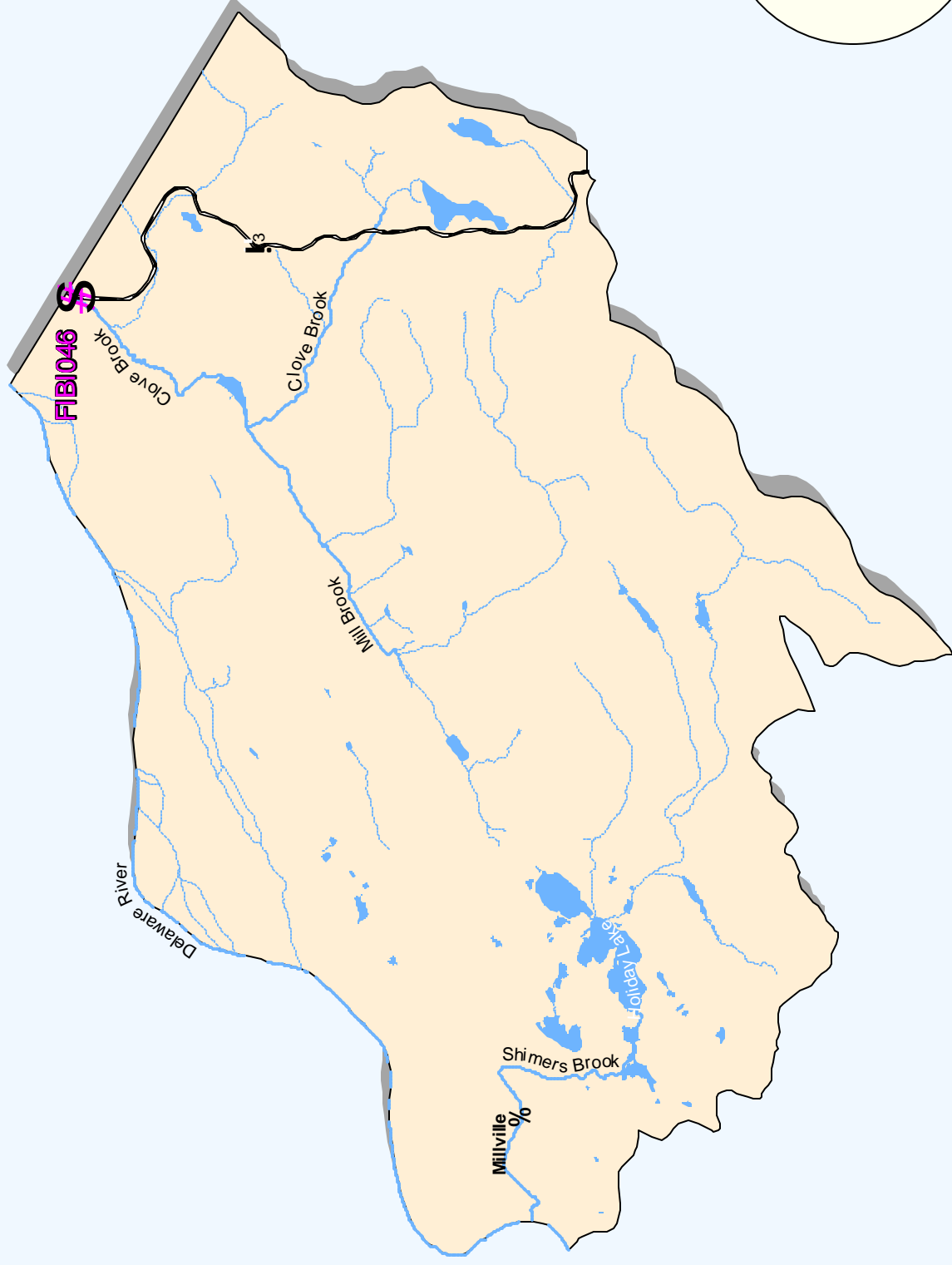
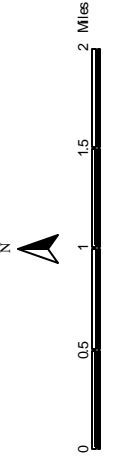


# Clove Brook - FIBI046



- S** FIBI Sampling Location
- Small Streams (1st and 2nd Order)
- Large Streams (3rd Order and Above)



**FIBI046  
CLOVE BROOK  
State Route 23  
Montague Township, Sussex County**

NY  
NJ

SR 23



0 0.1 Miles



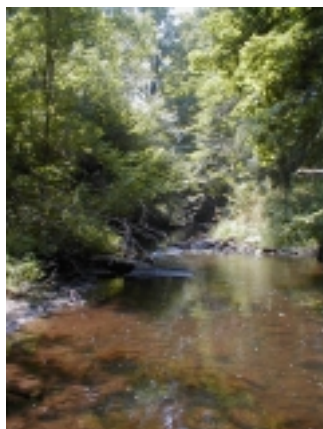
**LEGEND**

#	Start
#	Finish
—	Segment Sampled
Ⓜ	Direction of Flow



# SUMMARY OF RESULTS

## FIBI046 - Clove Brook



1. Stream Name:	Clove Brook
2. Sampling Date:	07-22-2002
3. Sampling Location:	NJ 23, Duttonville (41 21 06.33; -74 41 10.16)
4. Municipality:	Montague Twp.
5. County:	Sussex
6. Watershed Management Area:	1
7. Contributing Drainage Area:	10.9 Square Miles
8. Electrofishing Gear:	2 Backpack
9. FIBI Score and Rating:	46 - Excellent
10. Habitat Score and Rating:	169 - Optimal
11. Fishable Species Present:	Yes
12. Relevant AMNET <sup>1</sup> Station Data	
Proximity of FIBI station to AMNET station:	0.12 mi upstream AN0002
AMNET Rating:	Round 1 – MODERATE; Round 2 – MODERATE
13. Stream Chemistries	
Dissolved Oxygen:	7.7 mg/L
Temperature:	24.5 °C
pH:	7.65
Conductivity:	351 µmhos/cm
14. Number of Fish with Anomalies:	0
15. Length of Stream Segment Sampled:	150 Meters
16. Water Clarity:	Clear
17. Average Open Forest Canopy:	26.26%
18. Discharge:	16.71 ft. <sup>3</sup> /sec
19. Substrate:	0% Gravel and Sand, 80% Cobble, 20% Boulder, 0% Clay, 0% Silt
20. Habitat:	35% Riffle, 35% Run, 30% Pool
21. Snags:	Yes
22. Periphyton:	Moderate
23. Submerged Aquatic Vegetation:	Yes
24. Other Observations:	Two storm drains
25. Number of Fish Species Identified:	11
26. Total Number of Fish Collected:	272

<sup>1</sup> AMNET is the acronym for the DEP's ambient benthic macroinvertebrate monitoring network – a series of 820 monitoring stations located throughout the state's waterways that collects data on the health of bottom dwelling stream fauna which in turn is used to assess general water quality.

FIBI046 07-22-2002

Clove Brook

LISTED IN ORDER OF ABUNDANCE FOUND

COMMON NAME	SCIENTIFIC NAME	# FOUND	SIZE RANGE (INCHES)
Blacknose Dace	<i>Rhinichthys atratulus</i>	184	
Redbreast Sunfish*	<i>Lepomis auritus</i>	31	1.6-5.5
American Eel*	<i>Anguilla rostrata</i>	24	
White Sucker*	<i>Catostomus commersoni</i>	10	
Brown Trout*	<i>Salmo trutta</i>	7	5.9-10.2
Tessellated Darter	<i>Etheostoma olmstedii</i>	5	
Longnose Dace	<i>Rhinichthys cataractae</i>	4	
Redfin Pickerel*	<i>Esox americanus americanus</i>	4	3.1-5.1
Bluegill*	<i>Lepomis macrochirus</i>	1	2.4
Brown Bullhead*	<i>Ameiurus nebulosus</i>	1	
Pumpkinseed*	<i>Lepomis gibbosus</i>	1	2.6

\* Regulated as a fishable species under current New Jersey Fish and Wildlife codes

**Species Identified at Clove Brook (FIBI046)**  
(Not to Scale)



John Scarola

**Tesselated Darter**



John Scarola

**Bluegill**



John Scarola

**White Sucker**



John Scarola

**Brown Bullhead**



Burkhead  
&  
Jenkins

**Redfin Pickerel**



John Scarola

**Blacknose Dace**

**Species Identified at Clove Brook (FIBI046)**  
(Not to Scale)



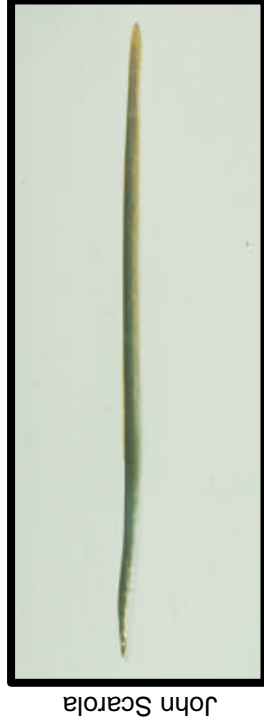
John Scarola



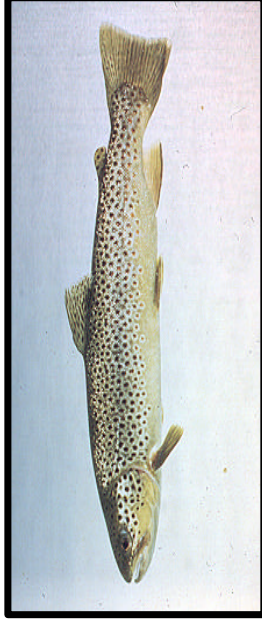
Shute

Redbreast Sunfish

Longnose Dace



John Scarola



John Scarola

American Eel

Brown Trout



John Scarola

Pumpkinseed

FIBI046 - Clove Brook @ NJ 23

Date Sampled - 7/22/2002

Excellent

Good

Fair

Poor

Score

# of Fish Species

5

# of Benthic Insectivorous Species (BI)

5

# of Trout and Centrarchid Species (trout, bass, sunfish, crappie)

5

# of Intolerant Species (IS)

3

Proportion of Individuals as White Suckers

5

Proportion of Individuals as Generalists (carp, creek chub, banded killifish, goldfish, fathead minnow, green sunfish)

5

Proportion of Individuals as Insectivorous **Cyprinids** (I and BI)

5

Proportion of Individuals as Trout

\*whichever gives better score

OR

Proportion of Individuals as Piscivores (Excluding American Eel)\*

3

Number of Individuals in Sample

5

Proportion of Individuals w/disease/anomalies (excluding blackspot)

5

Total

46

Stream Rating

45-50      **Excellent**

37-44      **Good**

29-36      **Fair**

10-28      **Poor**

# HABITAT ASSESSMENT FOR *HIGH* GRADIENT STREAMS

Clove Brook (FIBI046) – 7/22/02

	Condition Category																				
	Optimal					Suboptimal					Marginal					Poor					
1. Epifaunal Substrate /Available Cover	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient).					40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).					20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.					Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.					
SCORE 18	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
2. Embeddedness	Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space					Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.					Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment.					Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment.					
SCORE 18	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
3. Velocity/Depth Regimes	All 4 velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (slow is <0.3 m/s, deep is >0.5 m)					Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).					Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).					Dominated by 1 velocity / depth regime (usually slow-deep).					
SCORE 15	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
4. Sediment Deposition	Little or no enlargement of islands or point bars and less than 5% (<20% for low-gradient streams) of the bottom affected by sediment deposition.					Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools.					Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.					Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition.					
SCORE 19	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.					Water fills >75% of the available channel; or <25% of channel substrate is exposed.					Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.					Very little water in channel and mostly present as standing pools.					
SCORE 16	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.					Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.					Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.					Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. In stream habitat greatly altered or removed entirely.					
SCORE 18	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
7. Frequency of Riffles (or bends)	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.					Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15.					Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25.					Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25.					
SCORE 14	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
8. Bank Stability (score each bank) Note: determine left or right side by facing downstream.	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.					Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.					Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.					Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.					
SCORE 8 (LB)	Left	10		9		8		7		6	5	4		3		2		1		0	
SCORE 8 (RB)	Right	10		9		8		7		6	5	4		3		2		1		0	
9. Bank Vegetative Protection (score each bank)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, under story shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.					70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.					50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.					Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.					
SCORE 9 (LB)	Left	10		9		8		7		6	5	4		3		2		1		0	
SCORE 9 (RB)	Right	10		9		8		7		6	5	4		3		2		1		0	
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.					Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.					Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.					Width of riparian zone <6 meters; little or no riparian vegetation due to human activities.					
SCORE 9 (LB)	Left	10		9		8		7		6	5	4		3		2		1		0	
SCORE 8 (RB)	Right	10		9		8		7		6	5	4		3		2		1		0	

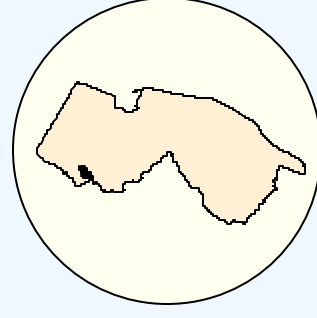
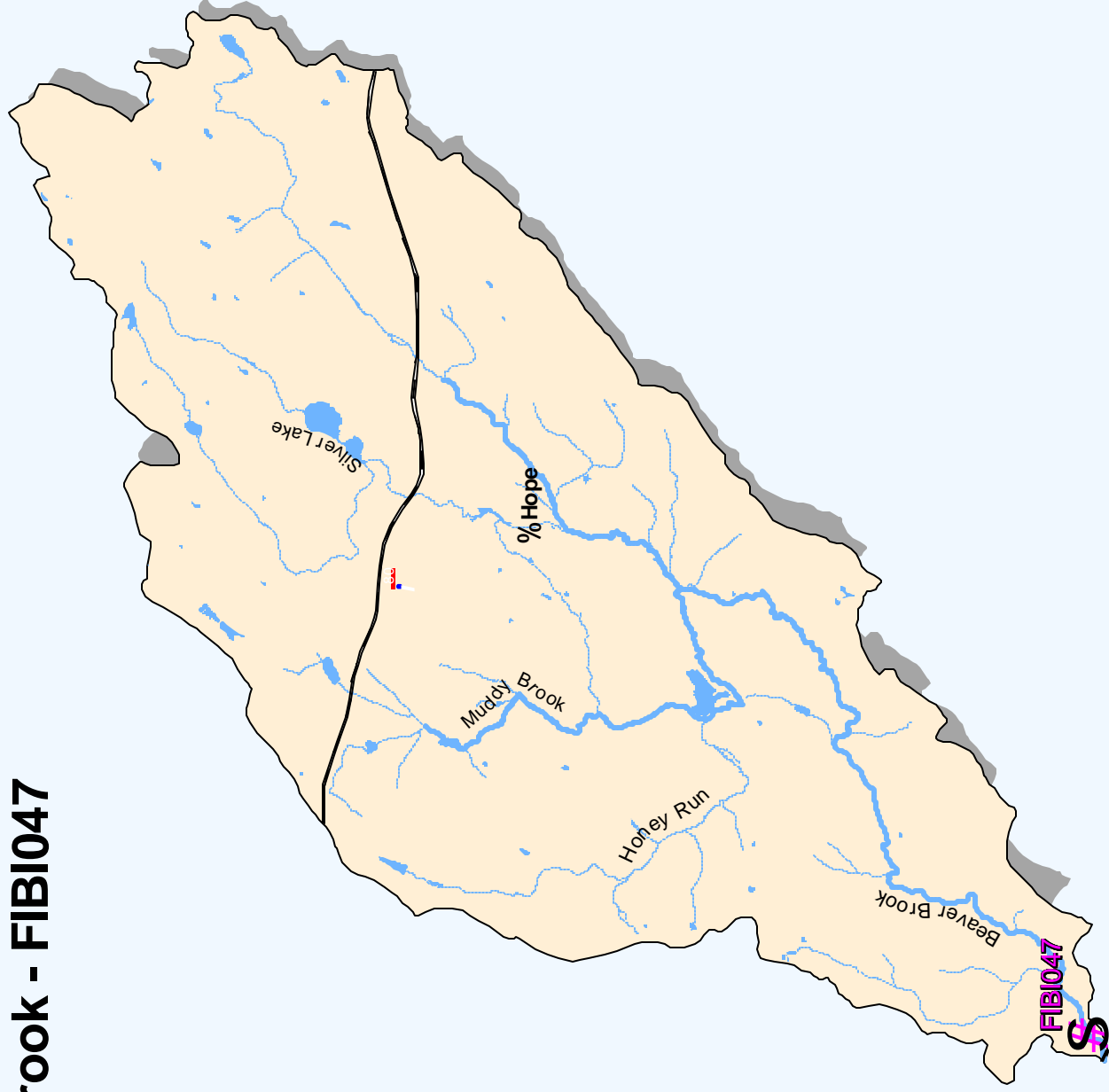
## HABITAT SCORE

169

HABITAT SCORES	VALUE
OPTIMAL	160 – 200
SUB-OPTIMAL	110 – 159
MARGINAL	60 – 109
POOR	< 60

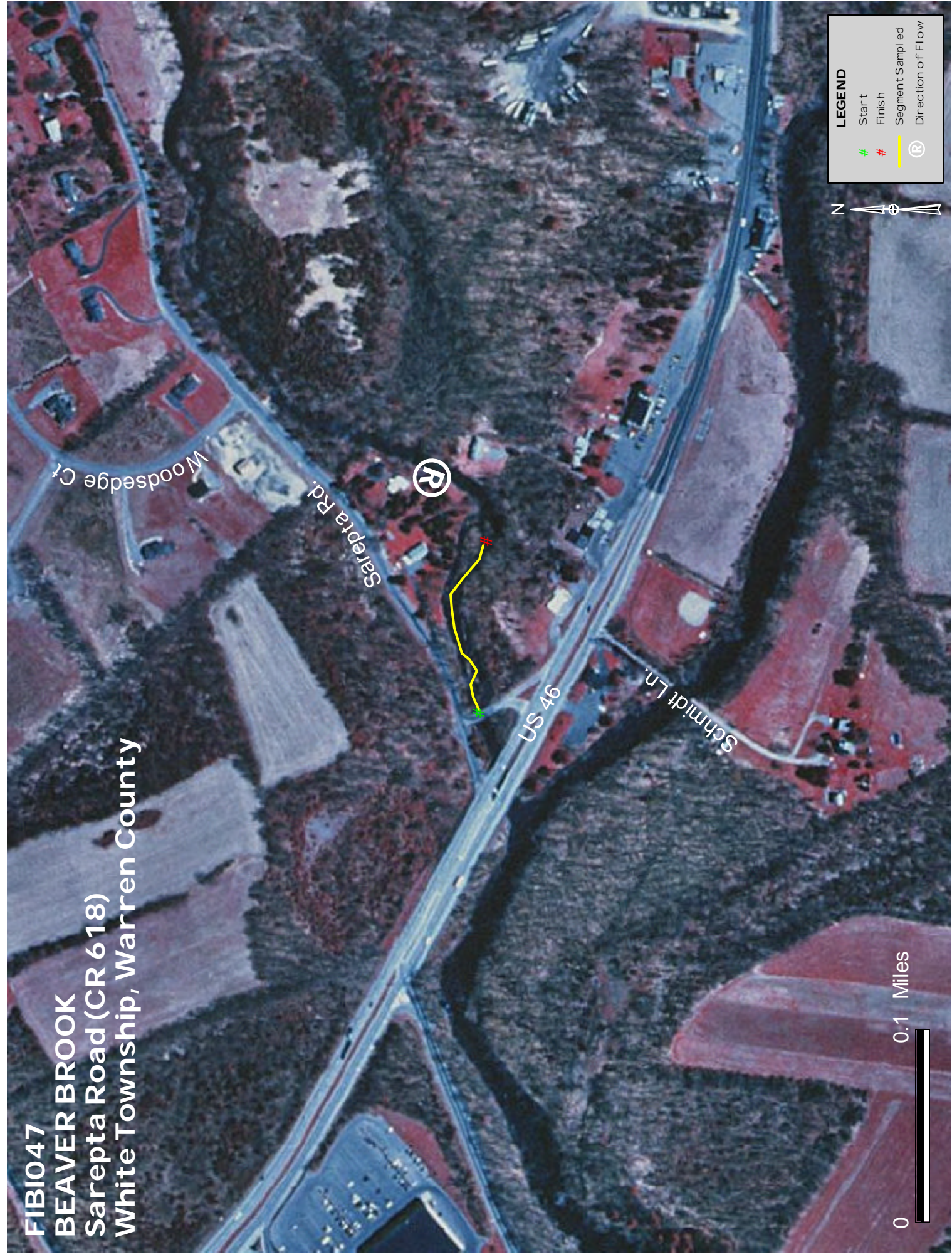


# Beaver Brook - FIBI047



- S** FIBI Sampling Location
- Small Streams (1st and 2nd Order)
- Large Streams (3rd Order and Above)

**FIBI047**  
**BEAVER BROOK**  
**Sarepta Road (CR 618)**  
**White Township, Warren County**





# SUMMARY OF RESULTS

## FIBI047 - Beaver Brook



1. Stream Name:	Beaver Brook
2. Sampling Date:	07-23-2002
3. Sampling Location:	Off Sarepta Rd (CR 618), Near US 46 (40 50 36.86; -75 02 46.37)
4. Municipality:	White Twp.
5. County:	Warren
6. Watershed Management Area:	1
7. Contributing Drainage Area:	36.8 Square Miles
8. Electrofishing Gear:	2 Backpack
9. FIBI Score and Rating:	40 - Good
10. Habitat Score and Rating:	172 - Optimal
11. Fishable Species Present:	Yes
12. Relevant AMNET <sup>1</sup> Station Data	
Proximity of FIBI station to AMNET station:	AN0047
AMNET Rating:	Round 1 – NONE; Round 2 – NONE
13. Stream Chemistries	
Dissolved Oxygen:	11.3 mg/L
Temperature:	22.4 °C
pH:	7.4
Conductivity:	527 µmhos/cm
14. Number of Fish with Anomalies:	0
15. Length of Stream Segment Sampled:	150 Meters
16. Water Clarity:	Clear
17. Average Open Forest Canopy:	44.46%
18. Discharge:	42.3 ft. <sup>3</sup> /sec
19. Substrate:	25% Gravel and Sand, 50% Cobble, 25% Boulder, 0% Clay, 0% Silt
20. Habitat:	60% Riffle, 20% Run, 20% Pool
21. Snags:	No
22. Periphyton:	Moderate
23. Submerged Aquatic Vegetation:	Yes
24. Other Observations:	
25. Number of Fish Species Identified:	14
26. Total Number of Fish Collected:	320

<sup>1</sup> AMNET is the acronym for the DEP's ambient benthic macroinvertebrate monitoring network – a series of 820 monitoring stations located throughout the state's waterways that collects data on the health of bottom dwelling stream fauna which in turn is used to assess general water quality.

## LISTED IN ORDER OF ABUNDANCE FOUND

COMMON NAME	SCIENTIFIC NAME	# FOUND	SIZE RANGE (INCHES)
Blacknose Dace	<i>Rhinichthys atratulus</i>	105	
American Eel*	<i>Anguilla rostrata</i>	102	
White Sucker*	<i>Catostomus commersoni</i>	32	
Longnose Dace	<i>Rhinichthys cataractae</i>	23	
Tessellated Darter	<i>Etheostoma olmsted</i>	17	
Common Shiner	<i>Luxilus cornutus</i>	10	
Cutlips Minnow	<i>Exoglossum maxillingua</i>	9	
Banded Killifish	<i>Fundulus diaphanus</i>	8	
Creek Chub	<i>Semotilus atromaculatus</i>	6	
Bluegill*	<i>Lepomis macrochirus</i>	2	2.4-3.0
Rainbow Trout*	<i>Oncorhynchus mykiss</i>	2	9.8-11.4
Sea Lamprey	<i>Petromyzon marinus</i>	2	
Eastern Mudminnow	<i>Umbra pygmaea</i>	1	
Largemouth Bass*	<i>Micropterus salmoides</i>	1	7.1

\* Regulated as a fishable species under current New Jersey Fish and Wildlife codes



**Species Identified at Beaver Brook (FIBI047)**  
(Not to Scale)



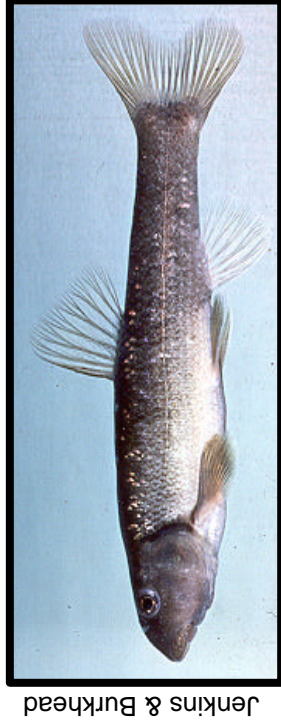
John Scarola



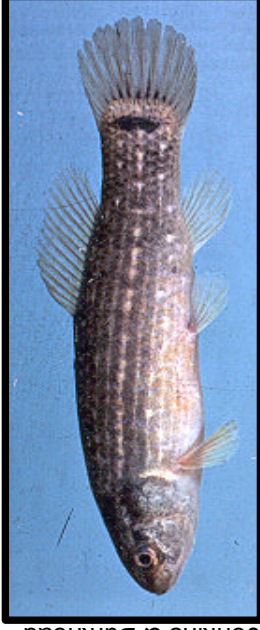
AFS

**Tesselated Darter**

**Largemouth Bass**



Jenkins & Burkhead



Jenkins & Burkhead

**Cutlips Minnow**

**Eastern Mudminnow**



John Scarola



John Scarola

**White Sucker**

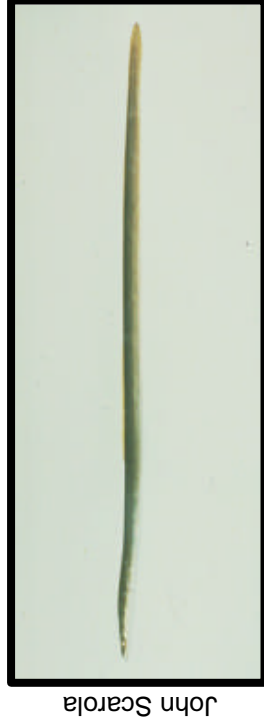
**Blacknose Dace**

**Species Identified at Beaver Brook (FIBI047)**  
(Not to Scale)



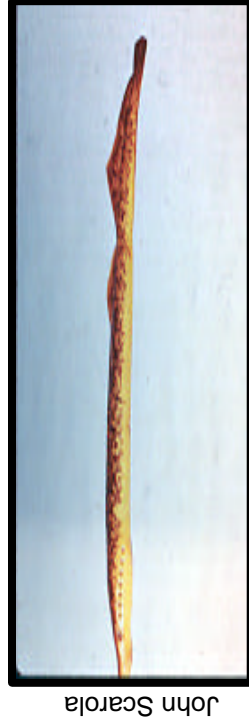
John Scarola

**Bluegill**



John Scarola

**American Eel**



John Scarola

**Sea Lamprey**



John Scarola

**Rainbow Trout**



Konrad Schmidt

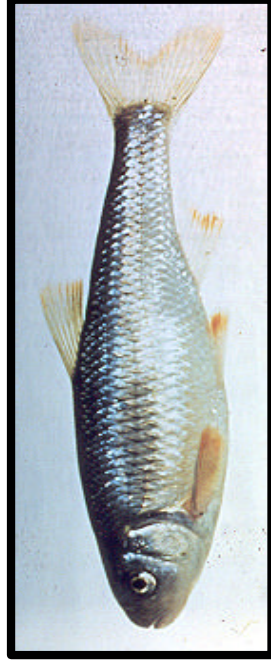
**Creek Chub**



Shute

**Longnose Dace**

**Species Identified at Beaver Brook (FIBI047)**  
(Not to Scale)



John Scarola

**Common Shiner**



John Scarola

**Banded Killifish**

**FIBI047 - Beaver Brook @ Sarepta Rd near US 46**

Excellent

**Good**

Fair

Poor

**Date Sampled - 7/23/2002**

	Score
# of Fish Species	5
# of Benthic Insectivorous Species (BI)	5
# of Trout and Centrarchid Species (trout, bass, sunfish, crappie)	3
# of Intolerant Species (IS)	3
Proportion of Individuals as White Suckers	3
Proportion of Individuals as Generalists (carp, creek chub, banded killifish, goldfish, fathead minnow, green sunfish)	5
Proportion of Individuals as Insectivorous <b>Cyprinids</b> (I and BI)	5
Proportion of Individuals as Trout	*whichever gives better score
OR	
Proportion of Individuals as Piscivores (Excluding American Eel)*	1
Number of Individuals in Sample	5
Proportion of Individuals w/disease/anomalies (excluding blackspot)	5
Total	40

**Stream Rating**

<b>45-50</b>	<b>Excellent</b>
<b>37-44</b>	<b>Good</b>
<b>29-36</b>	<b>Fair</b>
<b>10-28</b>	<b>Poor</b>



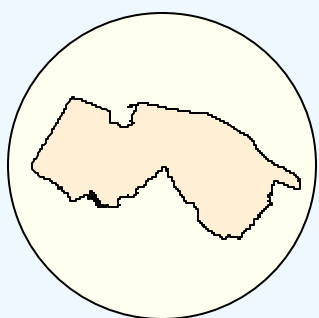
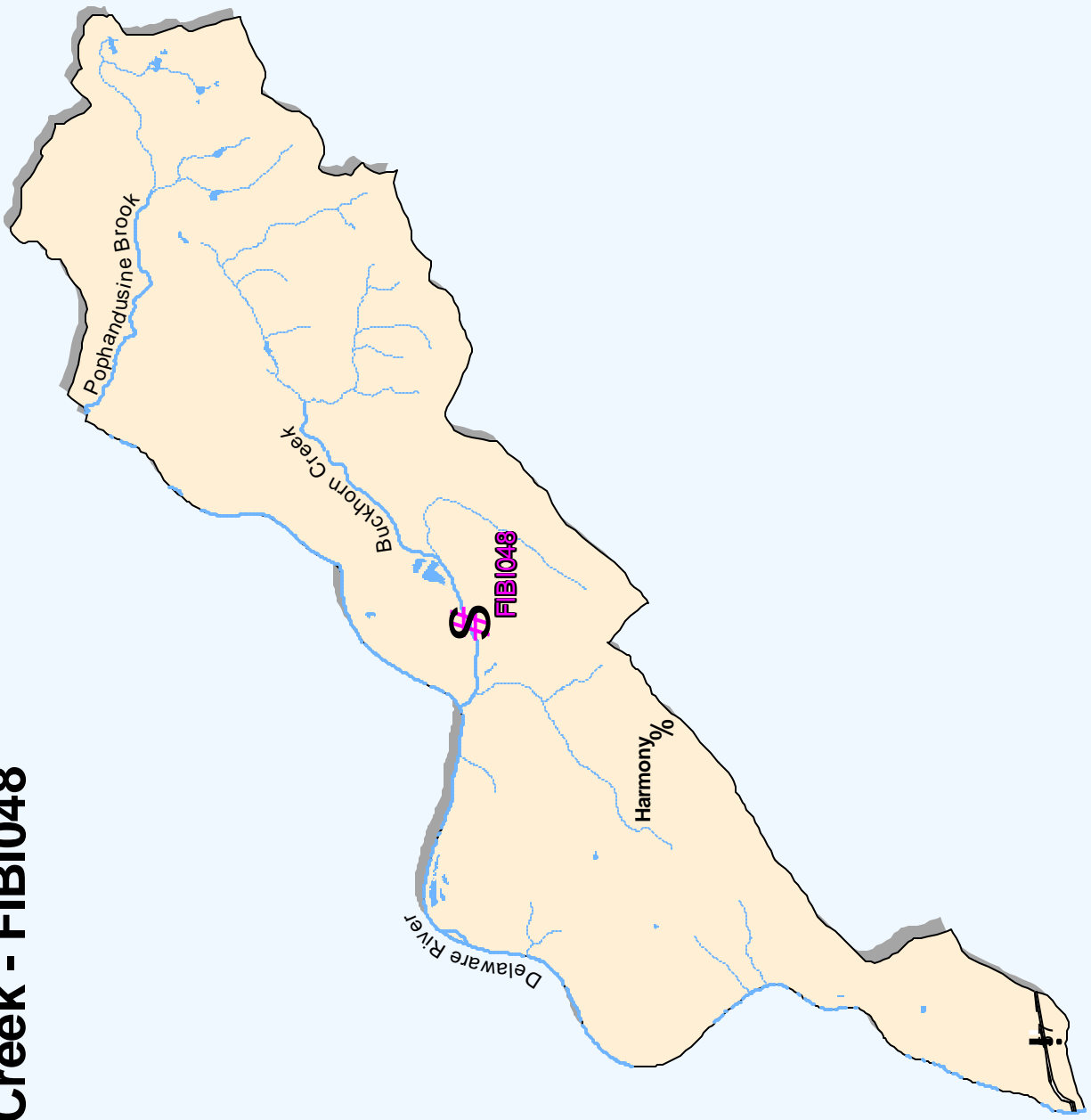
	Condition Category																				
	Optimal					Suboptimal					Marginal					Poor					
1. Epifaunal Substrate /Available Cover	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient).					40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).					20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.					Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.					
SCORE 19	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
2. Embeddedness	Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space					Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.					Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment.					Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment.					
SCORE 17	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
3. Velocity/Depth Regimes	All 4 velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (slow is <0.3 m/s, deep is >0.5 m)					Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).					Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).					Dominated by 1 velocity / depth regime (usually slow-deep).					
SCORE 18	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
4. Sediment Deposition	Little or no enlargement of islands or point bars and less than 5% (<20% for low-gradient streams) of the bottom affected by sediment deposition.					Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools.					Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.					Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition.					
SCORE 19	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.					Water fills >75% of the available channel; or <25% of channel substrate is exposed.					Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.					Very little water in channel and mostly present as standing pools.					
SCORE 17	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.					Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.					Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.					Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. In stream habitat greatly altered or removed entirely.					
SCORE 19	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
7. Frequency of Riffles (or bends)	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.					Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15.					Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25.					Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25.					
SCORE 17	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
8. Bank Stability (score each bank) Note: determine left or right side by facing downstream.	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.					Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.					Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.					Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.					
SCORE <u>8</u> (LB)	Left	10	9			8	7	6			5	4	3			2	1	0			
SCORE <u>6</u> (RB)	Right	10	9			8	7	6			5	4	3			2	1	0			
9. Bank Vegetative Protection (score each bank)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, under story shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.					70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.					50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.					Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.					
SCORE <u>10</u> (LB)	Left	10	9			8	7	6			5	4	3			2	1	0			
SCORE <u>8</u> (RB)	Right	10	9			8	7	6			5	4	3			2	1	0			
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.					Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.					Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.					Width of riparian zone <6 meters; little or no riparian vegetation due to human activities.					
SCORE <u>10</u> (LB)	Left	10	9			8	7	6			5	4	3			2	1	0			
SCORE <u>4</u> (RB)	Right	10	9			8	7	6			5	4	3			2	1	0			

## HABITAT SCORE

172

HABITAT SCORES	VALUE
OPTIMAL	160 – 200
SUB-OPTIMAL	110 – 159
MARGINAL	60 – 109
POOR	< 60

# Buckhorn Creek - FIBI048



- S** FIBI Sampling Location
- Small Streams (1st and 2nd Order)
- Large Streams (3rd Order and Above)

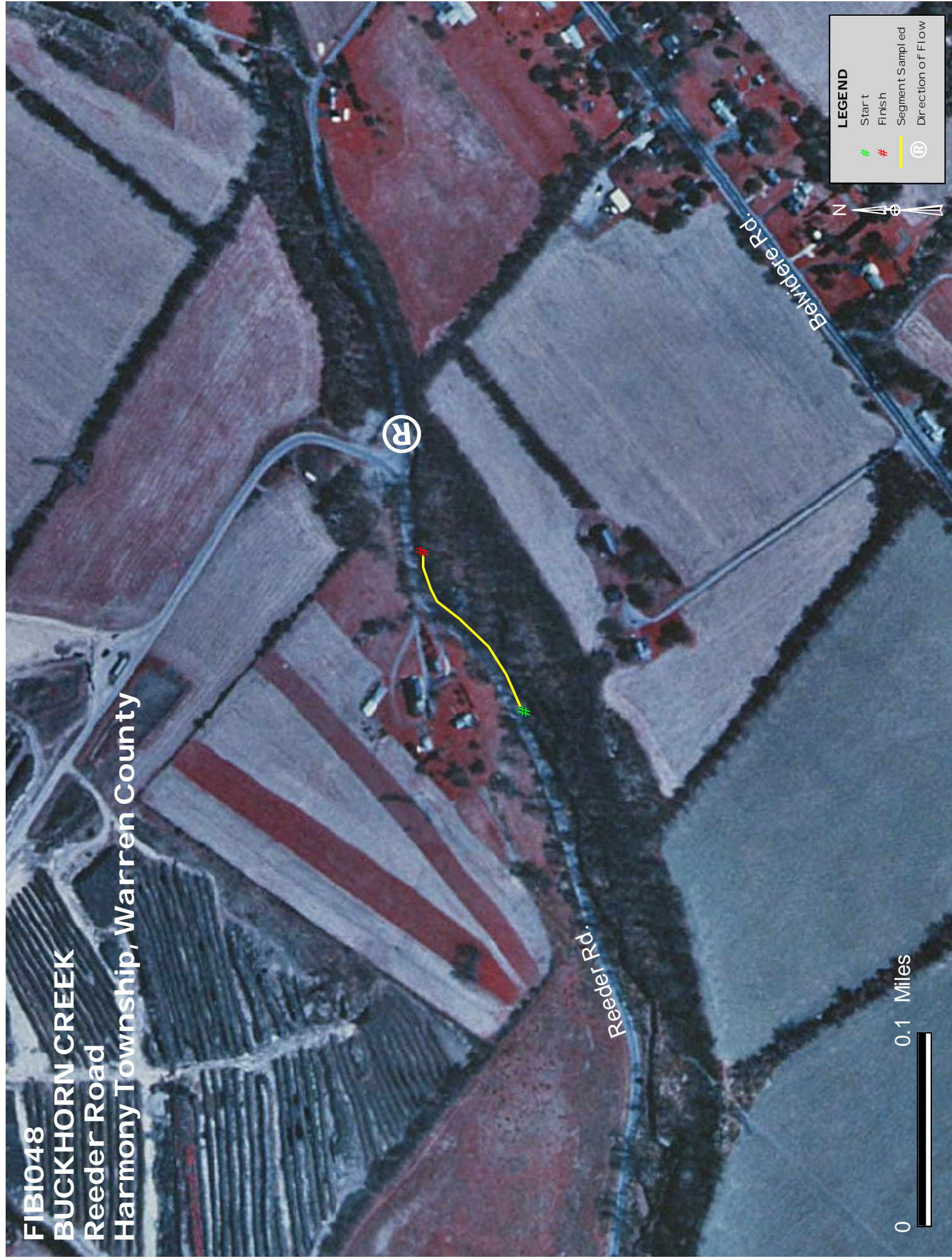


FIB1048

BUCKHORN CREEK

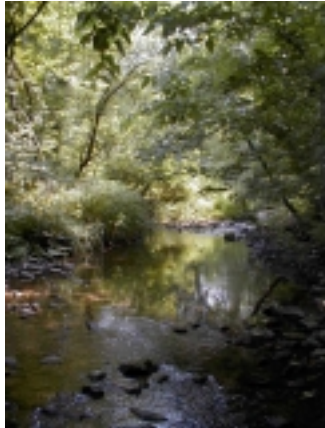
Reeder Road

Harmony Township, Warren County



# SUMMARY OF RESULTS

## FIBI048 - Buckhorn Creek



1. Stream Name:	Buckhorn Creek
2. Sampling Date:	07-09-2002
3. Sampling Location:	off Reeder Road (40 46 21.66; -75 07 09.29)
4. Municipality:	Harmony Twp.
5. County:	Warren
6. Watershed Management Area:	1
7. Contributing Drainage Area:	8 Square Miles
8. Electrofishing Gear:	Backpack
9. FIBI Score and Rating:	40 - Good
10. Habitat Score and Rating:	166 - Optimal
11. Fishable Species Present:	Yes
12. Relevant AMNET <sup>1</sup> Station Data	
Proximity of FIBI station to AMNET station:	0.66 mi upstream AN0050
AMNET Rating:	Round 1 – NONE; Round 2 – NONE
13. Stream Chemistries	
Dissolved Oxygen:	8.2 mg/L
Temperature:	21.5 °C
pH:	7.17
Conductivity:	210 µmhos/cm
14. Number of Fish with Anomalies:	1
15. Length of Stream Segment Sampled:	150 Meters
16. Water Clarity:	Clear
17. Average Open Forest Canopy:	23.4%
18. Discharge:	5.24 ft. <sup>3</sup> /sec
19. Substrate:	10% Gravel and Sand, 80% Cobble, 5% Boulder, 0% Clay, 5% Silt
20. Habitat:	60% Riffle, 10% Run, 30% Pool
21. Snags:	Yes
22. Periphyton:	Slight
23. Submerged Aquatic Vegetation:	No
24. Other Observations:	Filamentous algae, Dead rainbow trout
25. Number of Fish Species Identified:	10
26. Total Number of Fish Collected:	763

<sup>1</sup> AMNET is the acronym for the DEP's ambient benthic macroinvertebrate monitoring network – a series of 820 monitoring stations located throughout the state's waterways that collects data on the health of bottom dwelling stream fauna which in turn is used to assess general water quality.



FIBI048 07-09-2002

Buckhorn Creek

LISTED IN ORDER OF ABUNDANCE FOUND

COMMON NAME	SCIENTIFIC NAME	# FOUND	SIZE RANGE (INCHES)
Blacknose Dace	<i>Rhinichthys atratulus</i>	459	
Creek Chub	<i>Semotilus atromaculatus</i>	80	
Tessellated Darter	<i>Etheostoma olmstedii</i>	73	
White Sucker*	<i>Catostomus commersoni</i>	55	
Longnose Dace	<i>Rhinichthys cataractae</i>	40	
American Eel*	<i>Anguilla rostrata</i>	23	
Margined Madtom	<i>Noturus insignis</i>	20	
Sea Lamprey	<i>Petromyzon marinus</i>	11	
Bluegill*	<i>Lepomis macrochirus</i>	1	2.4
Common Shiner	<i>Luxilus cornutus</i>	1	

\* Regulated as a fishable species under current New Jersey Fish and Wildlife codes

**Species Identified at Buckhorn Creek (FBI048)**  
(Not to Scale)



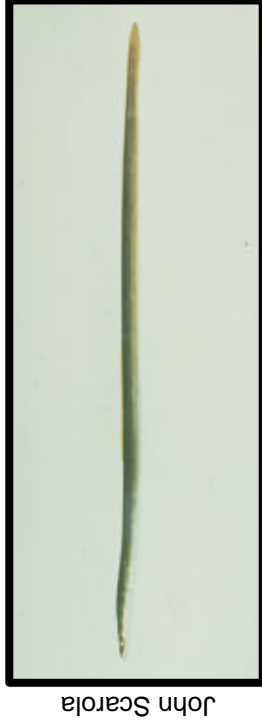
John Scarola



John Scarola

**Tesselated Darter**

**Bluegill**



John Scarola



Shute

**American Eel**

**Longnose Dace**



John Scarola

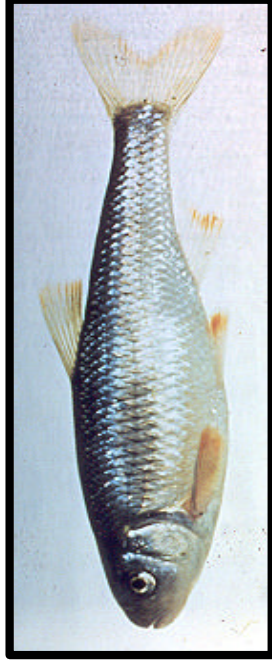


John Scarola

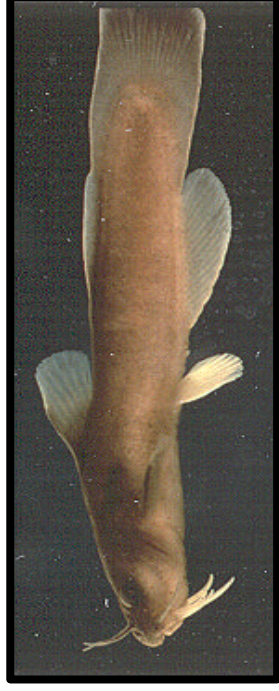
**White Sucker**

**Blacknose Dace**

**Species Identified at Buckhorn Creek (FBI048)**  
(Not to Scale)



John Scarola



Shute

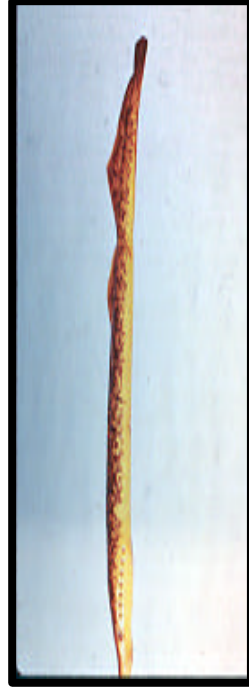
Common Shiner

Margined Madtom



Konrad Schmidt

Creek Chub



John Scarola

Sea Lamprey

**FIBI048 - Buckhorn Creek off Reeder Road**  
**Date Sampled - 7/09/2002**

Excellent **Good** Fair Poor

	Score
# of Fish Species	5
# of Benthic Insectivorous Species (BI)	5
# of Trout and Centrarchid Species (trout, bass, sunfish, crappie)	1
# of Intolerant Species (IS)	3
Proportion of Individuals as White Suckers	5
Proportion of Individuals as Generalists (carp, creek chub, banded killifish, goldfish, fathead minnow, green sunfish)	5
Proportion of Individuals as Insectivorous <b>Cyprinids</b> (I and BI)	5
Proportion of Individuals as Trout	*whichever gives better score
OR	
Proportion of Individuals as Piscivores (Excluding American Eel)*	1
Number of Individuals in Sample	5
Proportion of Individuals w/disease/anomalies (excluding blackspot)	5
Total	40

**Stream Rating**

**45-50      Excellent**  
**37-44      Good**  
**29-36      Fair**  
**10-28      Poor**



# HABITAT ASSESSMENT FOR *HIGH GRADIENT STREAMS* Buckhorn Creek (FIBI048) – 7/9/02

	Condition Category																				
	Optimal					Suboptimal					Marginal					Poor					
1. Epifaunal Substrate /Available Cover	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient).					40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).					20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.					Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.					
SCORE 18	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
2. Embeddedness	Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space					Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.					Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment.					Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment.					
SCORE 18	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
3. Velocity/Depth Regimes	All 4 velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (slow is <0.3 m/s, deep is >0.5 m)					Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).					Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).					Dominated by 1 velocity / depth regime (usually slow-deep).					
SCORE 13	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
4. Sediment Deposition	Little or no enlargement of islands or point bars and less than 5% (<20% for low-gradient streams) of the bottom affected by sediment deposition.					Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools.					Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.					Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition.					
SCORE 18	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.					Water fills >75% of the available channel; or <25% of channel substrate is exposed.					Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.					Very little water in channel and mostly present as standing pools.					
SCORE 16	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.					Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.					Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.					Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. In stream habitat greatly altered or removed entirely.					
SCORE 18	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
7. Frequency of Riffles (or bends)	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.					Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15.					Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25.					Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25.					
SCORE 16	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
8. Bank Stability (score each bank) Note: determine left or right side by facing downstream.	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.					Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.					Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.					Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.					
SCORE <u>9</u> (LB)	Left	10			9	8	7			6	5	4			3	2			1		0
SCORE <u>9</u> (RB)	Right	10			9	8	7			6	5	4			3	2			1		0
9. Bank Vegetative Protection (score each bank)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, under story shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.					70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.					50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.					Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.					
SCORE <u>9</u> (LB)	Left	10			9	8	7			6	5	4			3	2			1		0
SCORE <u>7</u> (RB)	Right	10			9	8	7			6	5	4			3	2			1		0
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.					Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.					Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.					Width of riparian zone <6 meters; little or no riparian vegetation due to human activities.					
SCORE <u>9</u> (LB)	Left	10			9	8	7			6	5	4			3	2			1		0
SCORE <u>6</u> (RB)	Right	10			9	8	7			6	5	4			3	2			1		0

## HABITAT SCORE

166

HABITAT SCORES	VALUE
OPTIMAL	160 – 200
SUB-OPTIMAL	110 – 159
MARGINAL	60 – 109
POOR	< 60